WHAT IS CLAIMED IS:

1. A waveguide gas laser comprising:

an enclosure filled with a lasing gas;

a waveguide structure within said enclosure, said waveguide structure including a rectangular ceramic block having first and second opposite surfaces and having a plurality of waveguide channels in said second surface arranged at an angle to each other in a zigzag arrangement and filled with the lasing gas of the enclosure;

first and second discharge-sustaining electrodes arranged parallel to each other on opposite sides of said ceramic block with said first and second electrodes facing said first and second surfaces respectively of said ceramic block for applying an electric field across said waveguide channels, said first and second electrodes spaced apart by a first distance;

at least one igniter arrangement associated with a selected one of said waveguide channels for igniting a discharge in said lasing gas in said waveguide channels, said igniter arrangement including a lateral extension extending from a wall of said selected waveguide channel laterally into said second surface of said ceramic block, said lateral extension being in gaseous communication with said selected waveguide channel and also filled with the lasing gas of the enclosure; and

said igniter arrangement including an igniter electrode electrically connected to said first electrode and extending into a blind hole in said second surface of said ceramic block, said blind hole in overlapping alignment with said lateral extension of said selected waveguide channel and being spaced apart from said second electrode, said igniter electrode and said second electrode for applying an electric field across said lateral extension of said selected waveguide channel, said igniter electrode and said second electrode being spaced apart by a second distance, said second distance being less than said third distance so that when the electrodes are energized, the electrical field across the lateral extension is greater than in the waveguide channel thereby facilitating the ignition of the discharge.

2. The laser of claim 1, wherein said second distance is less than or equal to about one-half of said first distance.

3. The laser of claim 1, wherein said waveguide channels have a first depth and said lateral extension has a second depth, said second depth being less than said first depth.

4. The laser of claim 1, wherein said first electrode is at a third distance from said selected waveguide channel and said igniter electrode is at a fourth distance from said lateral extension of said selected waveguide channel and said fourth distance is less than said third distance.

5. The laser of claim 1, wherein there is a plurality of igniter arrangements, one thereof associated with each of said waveguide channels.

6. The laser of claim 5, wherein are three waveguide channels and three igniter arrangements.

7. The laser of claim 1, wherein said igniter electrode is a metal plug inserted into said first electrode.

8. The laser of claim 7, wherein said igniter electrode is in electrical contact with a base of said blind hole in said ceramic block.

9. The laser of claim 1, wherein said first and second electrodes are in physical contact with said first and second surfaces of said ceramic block.

10. The laser of claim 1, wherein said lasing gas includes CO_2.

11. A waveguide gas laser, comprising:

an enclosure filled with a lasing gas;

a waveguide structure within said enclosure, said waveguide structure including a rectangular ceramic block having first and second opposite surfaces and having a plurality of waveguide channels in said second surface arranged at an angle to each other in a zigzag arrangement and filled with the lasing gas of the enclosure;

first and second discharge-sustaining electrodes arranged parallel to each other on opposite sides of said ceramic block with said first and second electrodes in contact with said first and second surfaces respectively of said ceramic block for applying an electric field across said waveguide channels, said first and second electrodes spaced apart by a first distance equal to the thickness of said ceramic block;

at least one igniter arrangement associated with a selected one of said waveguide channels for igniting a discharge in said lasing gas in said waveguide channels;

said igniter arrangement including a lateral extension extending from a wall of said selected waveguide channel laterally into said second surface of said ceramic block, said lateral extension being in gaseous communication with said selected waveguide channel and also filled with the lasing gas of the enclosure;

said igniter arrangement further including an igniter electrode electrically connected to said first electrode and extending into a blind hole in said second surface of said ceramic block, said blind hole in overlapping alignment with said lateral extension of said selected waveguide channel and being spaced apart from said second electrode, said igniter electrode and said second electrode for applying an electric field across said lateral extension of said selected waveguide channel, said igniter electrode and said second electrode being spaced apart by a second distance, and wherein said first electrode is at a third distance from said selected waveguide channel and said igniter electrode is at a fourth distance from said lateral extension of said selected waveguide channel and said second distance being less than one half of said third distance, said fourth distance is less than or equal to about one half said third distance so that when the electrodes are energized, the electrical field across the lateral extension is greater than in the waveguide channel thereby facilitating the ignition of the discharge.

12. In a waveguide gas laser including an enclosure filled with a lasing gas at a lasing gas pressure, a waveguide structure within the enclosure including a rectangular ceramic block having a plurality of waveguide channels therein arranged at an angle to each other in a zigzag arrangement and filled with the lasing gas of the enclosure, a method of operating the laser, comprising the steps of:

providing a lateral extension in at least a selected one of the waveguide channels, the lateral extension extending from a wall of the selected waveguide channel laterally into the ceramic block and being in gaseous communication with the selected waveguide channel and thereby being filled with the lasing gas of the enclosure; and

applying a first electric field across the lateral extension of the selected waveguide channel while simultaneously applying a second electric field smaller than the first electric field across the selected waveguide channel.

13. The method of claim 12, wherein the first electric field is sufficient to ignite a discharge in the lasing gas in the lateral extension of the selected waveguide at the lasing gas pressure, wherein said lateral extension is arranged such that a discharge ignited therein spreads into the lasing gas in the selected waveguide channel, and wherein the second electric field is sufficient to sustain the discharge in the lasing gas in the selected waveguide channel at the lasing gas pressure.

14. The method of claim 12, wherein the electric field across the lateral extension of the selected waveguide channel is about equal to or greater than twice the electric field across the selected waveguide channel.

15. The method of claim 12, wherein a lateral extension is provided in each of the waveguide channels and the first electric field is applied across each thereof.

16. A waveguide gas laser comprising:

an enclosure filled with a lasing gas;

a planar ceramic block, said ceramic block having at least one waveguide channel formed therein;

first and second opposed electrodes mounted on opposite sides of said ceramic block for energizing the laser gas;

an igniter arrangement including:

an open region formed in the ceramic block in fluid communication with the waveguide channel;

a blind hole formed in the ceramic block in vertical alignment with at least a portion of said open region; and

an igniter electrode electrically coupled to the first electrode and extending into said blind hole towards said second electrode so that the spacing between the end of the igniter electrode and the second electrode is less than the distance between the first and second electrodes so that when the electrodes are energized, the electrical field in the open region is greater than in the waveguide channel thereby facilitating the ignition of the discharge.

17. The laser of claim 16, wherein said distance between the end of the igniter electrode and the second electrode is less than or equal to about one-half of the distance between the first and second electrodes.

18. The laser of claim 16, wherein said igniter electrode is a metal plug inserted into said first electrode.

19. The laser of claim 16, wherein the end of the igniter electrode is in electrical contact with a base of said blind hole in said ceramic block.